

PLATE 210. FIG. 1. *Cladonia rangiferina* f. *crispata*. FIG. 2. *C. impexa* (toward f. *laxiuscula*). FIG. 3. *C. tenuis*. FIG. 4. *C. sylvatica* f. *sphagnoides*. FIG. 5. *C. mitis*, a typical little-branched form (Wareham, Mass., Robbins). FIG. 6. *C. papillaria* f. *molariformis* (upper and right-hand specimens) and f. *papillosa* (lower specimen). FIG. 7. *C. vulcanica* f. *minor* (District of Columbia, Lehnert). FIG. 8. *C. floerkeana* var. *intermedia* (Dumbarton, Scotland, Blake). FIG. 9. *C. bacillaris* f. *clavata* (two specimens). FIG. 10. *C. macilenta* f. *styracella*. FIG. 11. *C. coccifera* var. *stematina* (poorly developed plants). FIG. 12. *C. pleurota* f. *decorata* (three specimens). FIG. 13. *C. paludicola*. FIG. 14. *C. cristatella* f. *vestita* (upper specimen) and f. *Beauvoisii* (lower specimen).

PLATE 211. FIG. 1. *C. uncialis* f. *dicraea* (left-hand specimen; young plant) and f. *obtusata* (right-hand specimen) FIG. 2. *C. floridana* (four specimens; the two left-hand ones f. *typica*, the upper right-hand one typically developed f. *elegans*). FIG. 3. *C. delicata* f. *quercina* (Stoughton, Mass., Blake). FIG. 4. *C. furcata* var. *pinnata* f. *foliolosa* (left-hand specimen) and var. *racemosa* (right-hand specimen). FIG. 5. *C. squamosa* f. *squamosissima* (left-hand specimen) and m. *rigida* (two right-hand specimens; atypical). FIG. 6. *C. caespiticia*. FIG. 7. *C. apodocarpa* (thallus). FIG. 8. *C. mitrula* f. *imbricatula*. FIG. 9. *C. subcariosa* f. *evoluta* (two specimens). FIG. 10. *C. polycarpia*.

PLATE 212. FIG. 1. *C. clavulifera* (four specimens, all but the third one representing f. *subvestita*). FIG. 2. *C. alpicola* var. *karellica* (Sharon, Mass., Robbins & Blake). FIG. 3. *C. pyxidata* var. *neglecta* f. *simplex* (two specimens). FIG. 4. *C. chlorophaea*. FIG. 5. *C. coniocraea* f. *ceratodes* (upper specimen) and f. *truncata* (lower specimen). FIG. 6. *C. pityrea*. FIG. 7. *C. verticillata* f. *evoluta*. FIG. 8. *C. mateocyatha* (two specimens, the right-hand one f. *squamulata*; Wareham, Mass., Robbins). FIG. 9. *C. foliacea* var. *alcicornis* (thallus). FIG. 10. *C. strepsilis* f. *coralloidea*. FIG. 11. *C. piedmontensis* (the lower right one f. *lepidifera*, the two others slender plants of f. *obconica*).

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## SOLIDAGO AND ASTER IN WASHINGTON COUNTY, MAINE

CLARENCE HINCKLEY KNOWLTON

SEVERAL of my recent vacations have come at the latter end of the summer, and have taken me to Washington County in extreme eastern Maine, when the Asters and Goldenrods were at their prime. The assortment of species and varieties and their relative abundance is quite different from conditions in other parts of New England, and are therefore of considerable interest. In addition to many previous observations I took special pains to check stations in various parts of the county in the years 1928 and 1929. There are still large areas of woodland in the northern part of the county which have never met the eye of the botanist, but the list given seems to be fairly adequate for the coastal strip and the organized towns between the sea and the forest.

I have included collections made by other botanists, notably G. G. Kennedy, Kate Furbish, M. L. Fernald, K. M. Wiegand and S.



N. F. Sanford. These are included in the herbaria of the New England Botanical Club, Boston Society of Natural History, Gray Herbarium, and Mr. Sanford's own herbarium. My own collection includes a great many of these Washington County plants, also.

*SOLIDAGO LATIFOLIA* L. Rich woods, deciduous, Cooper. On Lead Mountain in Township No. 28, Hancock County, there is a great abundance of this, growing at 2000 feet elevation and above. This township borders on Washington County.

*S. BICOLOR* L. Frequent in dry sunny places.

*S. MACROPHYLLA* Pursh. This is a typical plant in the Canadian spruce forest near the sea, at Lubec, Cutler and Roque Bluffs. It is associated with *Thelypteris spinulosa* (O. F. Mueller) Nieuwl., var. *americana* (Fischer) Weatherby, and *Aster acuminatus* Michx., just as in the mountainous regions of western Maine, New Hampshire and Vermont. It often grows close down to the high-tide level on the shore. When the woods are cut away, as I have noted recently at Lubec and at Roque Bluffs, the ferns are stunted by the sun, while the two composite plants find new food supplies in the bared humus, and grow with great luxuriance. I have seen *S. macrophylla* a meter in height, with a big thyrses of very large flowers, under these conditions. At Roque Bluffs in 1928 I saw a clearing of two or three acres filled with these two species in flower, a most beautiful sight.

*S. PUBERULA* Nutt. Very common in open spruce woods near the sea, especially on headlands, as well as in dry sunny places inland.

*S. SEMPERVIRENS* L. Edges of salt marshes and wet seashore, all along the coast, very common.

*S. JUNCEA* Ait. This species, so common and familiar in many other parts of New England, is one of the rarities in Washington County. I have noted it in but one place, a dry bank in the city of Calais.

*S. UNILIGULATA* (DC.) Porter. This is one of the most characteristic plants of the county. It varies in size from large specimens 6 dm. high growing in rich moist soil to the tenuous little plants of the peatbog not over 2 dm. tall. The axis and branches of the inflorescence are almost as yellow as the flowers.

*S. RUGOSA* Mill. Moist thickets, exceedingly common throughout.

*S. RUGOSA* Mill., var. *VILLOSA* (Pursh) Fernald. The same habitat as the species; found at Roque Bluffs, Machias, Machiasport, Cutler, on the coast, and at Wesley inland.

×*S. ASPERULA* Desf. After much search along the shore at East Machias, where both *S. rugosa* and *S. sempervirens* flourish, I found a few scattered plants of this interesting hybrid, Sept. 5, 1929. One queer specimen looked like a hybrid of *S. sempervirens* with *S. nemoralis*.

*S. NEMORALIS* Ait. Dry soil, very common and abundant.

*S. CANADENSIS* L. Moist thickets, fields and pastures, common.



*S. SEROTINA* Ait. This is a rare species in the county. I found it in only one place, at Marshfield, in moist rich soil by the roadside, Sept. 7, 1929.

*S. GRAMINIFOLIA* (L.) Salisb., var. *NUTTALLII* (Greene) Fernald. Moist soil, especially in clay, very common throughout.

*ASTER MACROPHYLLUS* L. Rich open woods, frequent. The form with minute glands in the inflorescence which has been called var. *IANTHINUS* (Burgess) Fernald seems to be about as abundant as the strongly glandular form which is the type.

*A. MACROPHYLLUS* L., var. *VELUTINUS* Burgess. Open woods, at Roque Bluffs, Trescott, Perry and No. 14 Township.

*A. RADULA* Ait. Swamps and heaths in rich soil, common. A beautiful species.

*A. RADULA* Ait., var. *STRICTUS* (Pursh) Gray. Damp heath, Boot Cove, Lubec (*M. L. Fernald*, Aug. 2, 1909); Cutler (*Kate Furbish*, July 25, 1902).

*A. UNDULATUS* L. Cutler (*Kate Furbish* in 1902).

*A. CORDIFOLIUS* L. This species, so common elsewhere, is rare in Washington County, occurring as a dooryard weed in Machias, Machiasport and Lubec.

*A. LINDLEYANUS* T. & G. Moist fields and roadsides; not noted near the shore, but frequent and often abundant in the settled towns from Beddington and Cherryfield east to Calais (ten stations noted). At its best this is a very handsome species.

*A. VIMINEUS* Lam., var. *DUBIUS* Wiegand. Blueberry plain, Beddington, Sept. 2, 1924. Specimen in herb. N. E. Botanical Club, determined by K. M. Wiegand.

*A. LATERIFLORUS* (L.) Britton. Moist soil, very common and abundant. All the material gathered seems to be of the typical form, according to Wiegand's recent revision (*RHODORA* xxx. 161, 1928), but var. *angustifolius* Wiegand has been collected in Hancock county near the line, and is undoubtedly occasional in the Washington County towns.

*A. PANICULATUS* Lam. Roadsides and moist open places, very common.

*A. PANICULATUS* Lam., var. *BELLIDIFLORUS* Burgess. This densely-flowered narrow-leaved variety as described in Gray's Manual, 7th ed., is occasional. I have noted it in abundance at five stations.

*A. JUNCEUS* Ait. River meadow, Princeton (*M. L. Fernald*, July 22, 1909).

*A. LONGIFOLIUS* Lam. Cutler and Lubec (*Kate Furbish*, 1902); coastal strand, Moose Island, Eastport (*M. L. Fernald*, 1909).

*A. NOVI-BELGII* L. Moist soil, common, especially near the coast. A very vigorous much-branched form is frequent in the rich soil at the extreme landward margin of the salt marshes.

*A. NOVI-BELGII* L., forma *ALBIFLORUS* Rand & Redfield. Barrier beach, Roque Bluffs.



A. NOVI-BELGII L., var. LITOREUS Gray. Edges of salt marshes and seashore, occasional.

A. PUNICEUS L. Swamps, very common throughout. This is the plant with the large, vivid, pale-blue flowers. A beautiful pink form was found in rich soil by the road in Edmunds, Sept. 9, 1929.

A. UMBELLATUS Mill. Moist soil, very common throughout. There are hundreds of acres covered with this aster, which often grows to a height of 15 dm. It is the most conspicuous species of the group, with beautiful cream-white flowers in mid-August.

A. ACUMINATUS Michx. Woods and clearings, very common.

A. NEMORALIS Ait. Boggy meadows and peat bogs at Roque Bluffs, Cutler, and Wass Island; stony edge of Bog Lake, Northfield (*M. A. Barber*, Aug. 27, 1898; *C. H. Knowlton*, Sept. 7, 1929).

A. NEMORALIS Ait., var. MAJOR Peck (var. *Blakei* Porter). Edge of peat bogs, Roque Bluffs and East Machias.

HINGHAM, MASSACHUSETTS.

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## A NEW STATION FOR CALLUNA

E. W. LITTLEFIELD

ON May 18, 1930, while inspecting some state plantations on the "Mountain Pond" area in Franklin County, New York, in company with Mr. E. J. Eliason, the writer discovered a patch of the European Heather (*Calluna vulgaris*, Hull). This plant formed a mat about a square yard in extent on the south edge of a plantation of Scotch pine (*Pinus sylvestris*, L.) located along the so-called "Slush Pond Road" in the town of Brighton (Twp. 18, Great Tract # 1, Macomb's Purchase), about three miles north of "Paul Smith's".

The occurrence of this species so far out of its known range and in an area which has for many years been wild forest land was thought sufficiently unusual to put on record, and a specimen was accordingly submitted to Dr. Homer D. House, State Botanist, who confirmed the identification. According to House's "Annotated List"<sup>1</sup> only one verified report of the occurrence of *Calluna* in New York State has been made previously. This was from Rensselaer County, quite outside the Adirondack region. Reports of the establishment of *Calluna* at two stations in the central part of the State, one in Oneida and the other in Herkimer County, have never been substantiated, though according to Dr. House there is some historical evidence to support the claim made in Paine's "Catalogue" (1865) that plants were actually brought into those localities from Massachusetts.

<sup>1</sup> N. Y. State Mus. Bull. 254: 551-2. 1924.